HSU Academic Program Criteria
Academic Program in Geology

I. The Vision for Humboldt State University (Limit: 2 pages) [15%]

Describe up to 5 curricular or co-curricular features of the program that are consistent with the Vision of HSU, and indicate which aspect(s) of the Vision align with that particular feature. Please provide sufficient information such that an individual unfamiliar with your program will clearly understand the feature's relevance.

Numbers in parentheses refer to the vision statements in the appendix of this document.

- Faculty and students are deeply involved in community outreach, education and emergency response planning. (7, but also 1, 2, 4, 5, and 8). Some specific examples are:

  a) earthquake and tsunami research, mitigation and education, including participation in international, national and regional tsunami planning and risk reduction efforts, public lectures, media interviews, HSU earthquake hotline, Humboldt Earthquake Education Center, the earthquake and tsunami education room at North Coast county fairs;

  b) earthquake hazard assessment, including interpretation of exposures in trenches across potential faults (e.g., BSS building, faults near Fortuna);

  c) organization and hosting of seven field-based conferences for regional and national organizations; participation in Humboldt Friends of Geology (FOG), an area-wide group of local geologic professionals, including giving talks on current research problems, mentoring students, leading field trips;

  d) providing advice to government agencies (e.g., Caltrans, Office of Emergency Services, Humboldt County, NOAA Fisheries, Corps of Engineers, State Parks) and tribes (Yurok, Hoopa) on issues relating to erosion and sedimentation, gravel mining, landslides and hazards

- Strong field emphasis, rigor, and breadth of our curriculum make our graduates desired as educators, and by agencies and consulting firms working on geologic and environmental problems, and (1, 2):

  a) about 40% of our graduates go on to complete graduate studies, and nearly 10% to careers in higher education;

  b) our graduates are employed largely by government agencies, forest/land management firms, and environmental/geotechnical consulting firms, where they are involved in such

things as mapping, assessment and remediation of fault, landslide, erosion, sediment, and groundwater contamination problems, and stream channel and watershed monitoring and rehabilitation efforts.

- Our geomorphology courses – geomorphology, fluvial processes, hillslope processes, soil geomorphology, Quaternary stratigraphy – have strong cross-disciplinary connections with geography, watershed management, engineering, wildland soils, fisheries biology, and plant ecology, and are commonly taken by students in those fields (2).
- Our entire program including both core majors courses and general education offerings emphasize the integrated nature of earth science and the role it plays in the critical challenges to human society in the 21st century. Challenges such as climate change, natural hazards and the availability of resources like water and energy are deeply rooted in the earth sciences and our classes require students to examine multiple lines of evidence derived from field, analytical, theoretical, experimental, and modeling studies to interpret observations about Earth and Earth's future (1, 2, 5, 8).

II. Demand (Limit: 1.5 pages per option, not including tables) [20%]

A. Internal demand for the degree program and courses in the degree program

1. Headcount Data

Major Academic Year (Fall/Spring) Average Headcount Summary Majors_overview_GEOL report generated: 16-APR-08									
Major Code	**Major Description**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
GEOL	Geology	52	61	67	52	56	57	62	61
GOSS	Geology (Geoscience Education)	0	2	1	4	4	6	5	7
Total		**52**	**63**	**68**	**56**	**60**	**63**	**67**	**68**

Second Majors by Academic Year (exclusive of primary majors) Majors_overview_GEOL report generated: 16-APR-08									
Major Code	**Major Description**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
GEOL	Geology	2	3	3	4	5	3	2	2
GOSS	Geology (Geoscience Education)	0	0	0	0	1	0	0	1
Total		**2**	**3**	**3**	**4**	**5**	**3**	**2**	**2**

Minors enrolled AY Average in Geology minors_enrolled_GEOL report generated: 06-MAR-08								
CLASS	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Frosh	0	0	0	0	0	0	0	1
Soph	1	1	1	1	1	0	0	0
Jr	2	1	1	2	2	2	0	1
Sr	12	8	11	8	4	5	4	2
	15	**10**	**13**	**10**	**6**	**6**	**4**	**3**

Majors by Sex and Ethnicity Majors_overview_GEOL report generated: 16-APR-08									
SEX	**Ethnicity**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Female	Asian	0	0	0	0	0	2	1	1
	Hispanic	2	3	2	1	1	1	3	2
	Native Amer	0	0	1	1	1	0	0	0
	White	14	16	18	17	19	19	19	18
	Other	0	0	0	0	1	1	1	1
	Unknown	2	6	8	9	7	7	8	7
sum		**18**	**25**	**28**	**28**	**27**	**29**	**31**	**28**
Male	Asian	1	0	0	0	0	0	1	2
	Hispanic	4	2	3	2	2	2	4	2
	Native Amer	0	0	0	0	0	0	0	1
	White	24	29	28	21	18	17	20	23
	Other	0	1	1	0	2	2	1	0
	Unknown	6	7	8	7	11	13	10	12
sum		**34**	**38**	**40**	**29**	**33**	**34**	**36**	**40**

Geology (with options) Degrees Awarded (incl. primary and second majors) degrees_awarded_B_GEOL report generated: 25-JUN-08								
MAJOR	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Geology	13	19	6	19	14	19	11	20
Geology (Geoscience Education)	0	1	0	0	0	1	2	0
sum	**13**	**20**	**6**	**19**	**14**	**20**	**13**	**20**

Note: women comprise about 42% of majors in the HSU geology program; nationwide they are 35 - 40%. Hispanics are 7% of our majors, nationwide they are 5%. No blacks self-identified above; nationwide they are 2% of geology majors. The earth sciences attract the smallest proportion of students of color of all the sciences.

Geology Degrees Awarded by Sex and Ethnicity (incl. primary and second majors) degrees_awarded_B_GEOL report generated: 25-JUN-08									
SEX	**Ethnicity**	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Female	Hispanic	0	2	0	2	0	1	0	0
	Native Amer	0	0	0	0	0	0	0	1
	White	3	2	2	7	3	6	3	3
	Unknown	1	1	0	1	2	2	2	2
sum		**4**	**5**	**2**	**10**	**5**	**9**	**5**	**6**
Male	Asian	1	1	0	0	0	0	0	0
	Hispanic	1	2	0	0	0	0	0	2
	Native Amer	1	0	0	0	0	0	0	0
	White	5	7	2	8	6	10	5	8
	Unknown	1	5	2	1	3	1	3	4
sum		**9**	**15**	**4**	**9**	**9**	**11**	**8**	**14**

Minors Awarded by Year in Geology minors_awarded_GEOL report generated: 25-JUN-08								
MINOR	**AY 99/00**	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**
Geology	6	6	4	8	8	6	1	5

2. FTES by Course Code

FTES taken in Geology classes by Majors (AY 02/03 - AY 07/08) course_ftes_smry_GEOL report generated: 30-JUN-08								
SUBJ	**Course level**	**Student Major**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
GEOL	Lower-div	Undeclared	13.2	13.0	9.3	8.2	7.7	7.9
		Psychology	3.4	4.3	4.8	3.0	5.4	5.1
		Business Administration	4.2	4.3	4.1	4.2	4.2	4.8
		Art	8.2	6.2	6.3	5.1	4.3	4.0
		Biology	3.5	3.1	3.8	3.4	4.0	3.3
		Liberal Studies-Elementary Ed	3.1	2.8	2.5	2.2	2.1	3.1
		Kinesiology	1.4	2.4	1.8	1.4	2.8	2.6
		English	2.5	2.3	1.9	2.4	1.7	2.5
		Fisheries Biology	2.0	2.2	1.8	1.0	3.9	1.7
		Geology	.7	.7	.6	.5	1.2	1.7
	Sub-total		**69.0**	**70.2**	**66.9**	**59.9**	**75.2**	**67.9**

FTES taken in Geology classes by Majors (AY 02/03 - AY 07/08) course_ftes_smry_GEOL report generated: 30-JUN-08								
SUBJ	**Course level**	**Student Major**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
GEOL	Upper-div	Geology	20.1	16.3	20.9	22.2	19.1	19.6
		Biology	3.0	2.1	2.9	2.6	1.1	1.5
		Oceanography	1.8	1.0	1.1	.8	1.1	1.2
		Art	2.6	3.1	2.3	2.5	1.8	1.1
		Geography	1.4	1.8	2.3	2.4	.9	1.1
	Sub-total		**54.6**	**59.9**	**59.1**	**51.6**	**42.8**	**36.5**

FTES taken in Geology classes by Majors (AY 02/03 - AY 07/08) course_ftes_smry_GEOL report generated: 30-JUN-08								
SUBJ	**Course level**	**Student Major**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
GEOL	All Levels	Geology	23.6	22.4	23.6	24.6	22.4	25.1
		Undeclared	14.8	14.5	11.5	10.6	9.1	8.6
		Psychology	4.8	5.9	6.5	3.8	6.3	5.7
		Business Administration	5.6	5.8	5.5	4.9	5.6	5.6
		Art	10.8	9.3	8.6	7.6	6.1	5.2
Total			**133.1**	**144.7**	**133.9**	**120.6**	**124.7**	**111.3**

3. Service to other HSU program/options

Document other HSU programs/options (including, GE) with required coursework from your program

Other HSU program/option name	Courses required List course number and units	Restricted elective courses List number and units
Biology/Ecology Emphasis	Geol 109 (4)	
California Studies minor	Geol 300 (3)	
Environmental Resources Engineering/major elective		Geol 350 (3)
Environmental Science/Ecological Restoration Option		Geol 350 (3)
Fisheries Biology	Geol 109 (4)	Geol 350 (3) Geol 550 (3)
Forestry/Forest Hydrology	Geol 109 (4) Geol 350 (3)	
Forestry/Forest Soils	Geol 109 (4)	

NRPI/Interpretation	Geol 109 (4)	
NRPI/Interpretation/Earth Resources	Geol 350 (3)	Geol 300/300L (4) or Geol 303 (3) or Geol 305 (3)
NRPI/Planning		Geol 350 (3) Geol 300/300L (4) Geol 308 (3)
Oceanography	Geol 109 (4)	
Oceanography minor		Geol 415 (3) Geol 460 (3) Geol 561 (3)
Pacific Basin Studies minor	Geol 308 (3)	Geol 300 (3)
Physical Science	Geol 109 (4)	Geol 300 (3) Geol 303 (3) Geol 310 (4) Geol 350 (3)
Physics/Astronomy Option	Geol 460 (3)	
Rangeland Resource Science	Geol 109 (4)	Geol 350 (3)
Science Education/Biology	Geol 109 (4) Geol 375 (3)	
Wildland Soil Science	Geol 109 (4) Geol 350 (3)	
Wildland Soil Science/minor		Geol 350 (3)

4. Comment on the internal demand **FOR EACH OPTION** of the Major. Explain any significant changes in internal program demand over past 7 years. Provide any additional relevant information of internal demand.

Geology BS

The demand for the BS, which includes a senior thesis but which is otherwise identical to the BA, has stayed constant at around 35 - 40% of geology degrees granted.

Geology BA

The demand for the BA has stayed constant at around 60 - 65% of geology degrees granted.

Geology (Geoscience Education)

- The demand for the Geoscience Education option, which was designed to meet state secondary credential requirements, has been disappointingly small - never more than 5 students/year. When the program was initiated, we anticipated growth to 20 or more students per year. However, changes in state-mandated education priorities at the high school level greatly reduced its appeal. Fortunately, the option requires no additional

resources to teach: the geology courses in the option are all ones that would be taught regardless.

- We are currently planning a major overhaul of this option, broadening the emphasis and creating a more appealing interdisciplinary Geoscience program to prepare students not only for teaching jobs but also for other environmental/energy-related careers.

Geology Minor

- We find the data tables regarding minors puzzling. In the "AY Average" table, most column totals are smaller than the sum of the entries in the column. The "Minors Awarded by Year" don't seem congruent with the AY Average table. We question whether the apparent drop in minors for the past two years is real, or an artifact of bad data. The numbers don't reflect what the department coordinator and the chair have observed. We believe that the correct number of minors would be around 6 - 8.
- The minor brings students into the department. We commonly find students starting out as minors and then switching to the Geology BA major.
- The geology minor requires no additional resources. The students take classes that would be taught regardless.

B. External demand for "graduates" from the program

Imagine you are answering a parent's question about job prospects and the demand for graduates of your program/option. Describe evidence of external demand for this program. Evidence may be cited from one of the following sources: the State of California http://www.labormarketinfo.edd.ca.gov/, the US Department of Labor http://www.bls.gov/OCO/, the National Association of Colleges and Employers, http://naceweb.org. Evidence may be cited from an additional source from, for example, a professional society relevant to your discipline.

Statistical overview for geologists/geoscientists and hydrologists:

For the California labor market only (from http://www.labormarketinfo.edd.ca.gov/)

Occupation	Years	Employment Estimated 2006	Employment Projected 2016	Employment Change Number	Employment Change Percent	Annual Avg Openings
Geologist	2006 -2016	3,900	4,900	1,000	25.6	200
Hydrologist	2006 -2016	1,000	1,300	300	30.0	60

For the national labor market (from http://www.bls.gov/OCO/)

Occupation	Years	Employment Estimated 2006	Employment Projected 2016	Employment Change Number	Employment Change Percent
Geologist	2006 -2016	31,000	38,000	6,800	22
Hydrologist	2006 -2016	8,300	10,000	2,000	24

According to the Bureau of Labor Statistics, median annual earnings of geoscientists were $72,660 in May 2006. The middle 50 percent earned between $51,860 and $100,650; the lowest 10 percent earned less than $39,740, the highest 10 percent more than $135,950.

Geology BS

Three recent articles* in the "Science Careers" section of the American Association for the Advancement of Science's journal "Science" document the rapidly growing demand for geoscience graduates. The number of geoscience jobs in industry is expected to grow by 22% between 2006 and 2016, significantly outpacing the projected 10% increase in all occupations, according to the U.S. Bureau of Labor Statistics (Gramling, 2008).

Additional evidence for the high demand for geoscientists is the Keynote Session scheduled for October 5, 2008 at the Geological Society of America Annual Meeting, (a meeting that generally draws 5,000 - 7,000 registrants) titled "Perspectives on an emerging workforce crisis in geology". The session description reads: "The recent and rapid increase in demand for geologists has yet to foster a comparable surge in enrollment. Industries served by geology are scrambling for available graduates. Academia's response is hampered by competing priorities and limited resources. This session assembles diverse perspectives to assess the existence, intensity, and best response to this perceived "workforce crisis" in geology." (GSA Today, 2008, vol.19, No.9, p.18).

Geoscience graduates have multidisciplinary training that qualifies them for jobs both in geology and in a spectrum of related fields. Employment opportunities for geoscientists range from petroleum (43%) and mining (12%) to government (18%), academia (17%) and environmental firms (8%) (Gramling, 2008).

The strong demand for geoscience graduates is reflected in rising salaries. According to the American Geological Institute, the average starting salary for a geoscientist in industry, academia or government was $74,000 in 2005, (a 9.7% increase over 2004), and the average salary for career scientists with 20 years' experience was $139,000 in 2005 (a 23% increase over the previous year) (Gramling, 2008).

*Gramling, C., "In the geosciences, business is booming", p. 856-857;
Laursen, L., "Geoscientists in high demand in the oil industry", p. 857-859; and
Coontz, R., "Hydrogeologists tap into demand for an irreplaceable resource", p.858-859 in: Science, vol. 321, August 8, 2008.

The HSU geology program differs from others in the CSU in:

1) our unique location that provides a natural laboratory for the study of earthquakes, tectonics and surface processes.
2) our strong emphasis on fieldwork – nearly all our classes have a field component, and the capstone is a six-week long summer field camp. Only 4 other CSU geology programs offer their own field camp. Employers find field experience particularly desirable (see 4 below).
3) the considerable involvement of students in independent research (senior thesis), faculty research, and professional activities. The department has developed an excellent institutional reputation with other universities for the quality of our students' preparation, and especially their involvement in faculty and independent research. Faculty from other institutions see our students participating in professional field trips and presenting at large national and regional meetings (2,000 – 14,000 attendees).

4) the great demand for our graduates by government, and environmental and geotechnical consulting firms. Our graduates are known for their ability to think on their feet, to handle things they have never seen before; this comes from the field orientation. In northern California or southern Oregon it is hard to find a consulting company or government agency employing geologists that hasn't employed one or more HSU geology graduates. This demand is documented in the Geology 2004 program review and the 2007 assessment.

Geology BA

See listing for Geology BS.

Geology (Geoscience Education)

See listing for Geology BS.

Geology Minor

The geology minor enables students in other disciplines to broaden their backgrounds and strengthen their skills by addition of a focused set of geology courses to their major requirements. Students choosing to minor in geology in the last three years have majored in geography, oceanography, anthropology, botany, biology, physical sciences, and art.

III. Program Quality (Limit: 6 pages, not including tables) [30%]

A. Students

1. For undergraduate programs

Geology (with options) Mean GWPE Scores (incl. primary and second majors)
degrees_awarded_B_GEOL report generated: 25-JUN-08

MAJOR	AY 99/00	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07
Geology	15.6	16.4	14.8	17.0	16.9	15.9	16.1	16.8
Geology (Geoscience Education)		15.0				16.0	16.0	
Overall	15.6	16.4	14.8	17.0	16.9	15.9	16.1	16.8

Provide evidence indicative of program quality related to student learning (e.g., patterns of student achievements in discipline-specific contexts such as special honors or awards, publications, presentations; passing rates on professional examinations; proportion of students who are admitted to graduate school and/or employed in a disciplinary field; and so on – as appropriate for your discipline).

•For the past two years, the CNRS Outstanding Student in Academic Discipline have been geology majors (Emily Astley, Jessica Shaw).

• At least 40% of our students go on to complete graduate studies. This percentage compares very favorably with the most recent American Geological Institute (AGI) study which found for 2000 that nationwide, 23% of students acquiring BA or BS degrees in earth sciences went on to graduate programs.

• A recent National Science Foundation survey showed that, on a per-capita basis, HSU sends more undergraduates to get earth science Ph.D degrees than any other public , non-Ph.D granting institution in the country. If all types of universities are included, HSU ranks second in the nation.

• 89% of our graduates currently have jobs in earth-science related fields and 92% worked in an earth-science related job at some point in their careers. The nation-wide average in 2000 according to AGI was that 60% of US undergraduate earth science students attain jobs in an earth science-related field.

• In the past five years our undergraduates had:

-- 8 presentations with faculty at national or regional professional meetings; student was lead author in 6 of these

-- student poster recognized as "Outstanding Student Presentation", 2005 Geological Society of America Cordilleran Section meeting (~2000 attendees)

-- 9 abstracts published with faculty; student was lead author in 6 of these

-- 3 papers published with faculty in peer-reviewed journals

• Our alumni have made significant contributions to earth sciences, in the last three years:

-- an alumni (Thomas) recognized as HSU Outstanding Alumni

-- a recipient of a Geological Society of America achievement award (Thomas)

-- a recipient of College of the Redwoods Faculty of the Year award (Bazard)

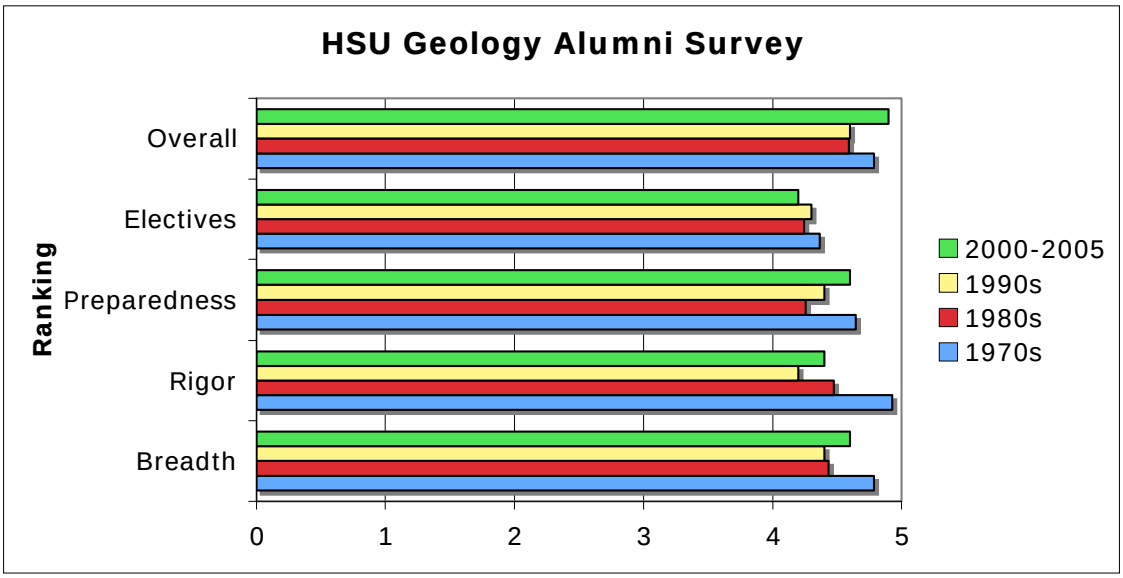
B. Faculty

1. Provide evidence of teaching effectiveness and commitment to continuous improvement of teaching. Include, for example, engagement in professional development for teaching (including around campus themes on learning outcomes and diversity, and on accessibility training), program approaches to ensure quality,

and/or recognitions, honors, and awards for excellence in the classroom as appropriate for your program.

• Over its history, the department has had 2 HSU Outstanding Professors (Longshore, Burke)

• Comments from graduates solicited as part of 2007 assessment, and in 2004 program review, uniformly attest to teaching excellence and effectiveness. The graph below summarizes responses from 85 alumni sorted by decade of graduation on the quality of the program:



• Faculty involvement in ongoing improvement of teaching and curriculum includes:

-- Workshops at national meetings, e.g., "Promoting authentic scientific research in the classroom" and "Hands-on inquiry-based classroom and laboratory assignments: bringing research in earth science processes and hydrology to K12 and undergraduate students" (Cashman, AGU 2006)

-- Participation in NSF/NAGT DLESE discussion panel for participants of On the Cutting Edge Professional Development series (Schwab 2005, 2007)

-- Participation in the NSF sponsored Earth Science Literacy Initiative to set national earth science high school and lower division requirements (Dengler 2008)

-- Attendance at on-campus lectures and workshops on teaching, e.g., CNRS lecture on "Teaching science and mathematics to a diverse population of students" (2008), "Workshop on Large Lectures" (2007), "Introduction to Merlot" workshop (2008), "Introduction to Moodle" (2008), "Intermediate Photoshop" (2005) (4 faculty)

-- Regular participants in mid-semester evaluation program (3 faculty)

2. Evidence of faculty engagement in scholarship/creative activities and service. (Express as a percentage of full-time or FERP faculty members **affiliated with the program**. For example, if 9 of 10 faculty affiliated with your program gave a paper at a professional meeting in 04/05, then enter 9/10 = 90%.) This table is to be completed by the department.

Scholarship/Creative Activities/Service	05/06	06/07	07/08
At least one peer-reviewed publication or creative product	71%	86%	86%
At least one funded grant or contract related to scholarship	57%	57%	57%
Invited participant or leader of workshops, expert panels, or task forces	14%	14%	57%
At least one presentation (paper, poster, exhibition, etc.) given at a professional society meeting	86%	86%	71%
Professional service activities at a regional or national level	43%	43%	43%
Service on at least one university or college-level committee (at least 1 hour/wk avg.)	29%	29%	29%

3. Provide explanations of the data above and/or descriptions of the patterns of faculty engagement in scholarly and/or creative activities and service as appropriate for your program.

As the table above demonstrates, the seven geology faculty are very productive. In the period 2005-2008 above they have:

- authored 50 peer-reviewed publications
- received 19 funded grants or contracts related to scholarship
- been invited participant/leader in 7 workshops, expert panels, or taskforces
- given 23 presentations at professional meetings
- organized 4 international symposia
- been engaged in 20 person-years of professional service, mostly editorships or NSF grant reviewing
- served on 7 person-years of university or college-level committees
- Over its history, the department has had 3 HSU Scholars of the year (Carver, Aalto, Dengler) and one McCrone Promising Scholar (Schwab)

4. Provide evidence for faculty mentoring of students. Include, for example, approaches to advising, directed study or research, and/or clubs or student professional chapters that involve faculty mentorship.

• All department faculty advise students on schedule planning and major contracts.
• All faculty serve, as appropriate, as principal advisors to senior thesis (BS) students and as supervisors of student-initiated directed study (Geol 499).
• Two faculty (Hemphill-Haley, Schwab) are advisors to the HSU Geology Club and the Disaster Preparation Club.
• Faculty involve students in 1) a local professional organization (Humboldt Friends of Geology) and 2) accompany them on both regional professional field excursions (Friends of the Pleistocene Pacific Cell) and to professional meetings (Geological Society of America, American Geophysical Union)
• Faculty encourage student involvement in their research (see also III.A.1)
• Since 2000, 15 geology students have staffed the earthquake-tsunami education rooms at the Humboldt and Del Norte county fairs under the supervision of a faculty member (Dengler). This involves demonstrating hands on displays and answering questions from the public.

5. Other evidence of quality indicators related to faculty that may not be listed elsewhere, including, for example, faculty diversity within the program.

• Since 1979 women make up approximately 30% of the department faculty. Nationwide women comprise only 13-17% of earth science faculty. For at least a decade our department accounted for half the female faculty of the entire College of Science.

C. Curriculum (differentiate by option, if appropriate)

1. Writing and oral communication learning outcomes
Describe how written and oral communication skills are included in your program.

• Written papers involving critical observation and analysis are required in 7 core courses, including capstone field camp, and at least 5 specialization courses.
• Oral presentations are required in senior seminar, paleontology, and field camp.

2. Assessment
   [Data on program progress with assessment tasks will be provided from the Faculty Associate for Assessment]
   Provide 2 examples of how you have used results of assessment of your program's student learning outcomes to adapt, enhance, or affirm your program's curriculum.

• 2007 assessment (Outcome 5: "Provide a sufficiently broad & rigorous background to allow students to enter professional careers or graduate school") *affirms* that we were very successfully meeting these goals (see Section 3.A.1). Responses from graduates indicated how important 1) the field emphasis and 2) the specialization courses are to professional success. To *enhance*, we have resisted administrative suggestions that our field emphasis be reduced and have lobbied to continue offering our historic breadth of specialization courses, even if enrollments in individual courses are not large. This breadth is essential for students to meet board certification requirements (see below).

3. Accreditation (if applicable)
   If the program is accredited, describe the need for this accreditation and its impact on the quality and composition of the curriculum of the program.

There is no accrediting body for geology programs, however board certification is becoming a standard for employment in the private sector and the federal government has set requirements for classification as a geologist. Licensing exams to work as a professional in California are now required for geology, hydrogeology, soil science and engineering geology. The geology curriculum prepares our students to meet the basic exam requirements, although university budget cuts our making it increasingly difficult to offer the appropriate courses.

4. Relevance and innovation
   Provide evidence through examples that demonstrate a curriculum that is relevant, innovative, forward looking, responsive to changing trends, and equips students to function in a diverse, global context.

• Acquisition and use of real data, especially field measurements, in class assignments, and involvement of students in projects with real-world consequences. For example, classes 1) survey landslides and use the data for slope stability analysis; 2) measure streamflow and sediment transport in local streams and use this to estimate sediment yield; 3) engage in

mapping of geologic units in trenches dug across potentially active faults to determine offset and earthquake frequency.

- Regular incorporation into teaching of current technology used in the profession – computer lab, GIS, spreadsheet modeling, image analysis, GPS surveying
- Undergraduate access to specialized high-technology equipment – e.g., X-ray fluorescence spectrometer, high-pressure experimental petrology laboratory, GIS lab

5. Interactions between graduate and undergraduate programs (if applicable)
   If this is a graduate program, what opportunities for undergraduates result (or are lost) by virtue of the graduate program.

- Geology graduate program (ESGE) provides opportunities for undergraduate involvement in graduate student research (field assistant, etc.) and mentoring
- Provides a greater variety of specialization courses for advanced undergraduates

6. Program uniqueness
   If your program provides unique educational opportunities or course content that is found at few or no other CSU institutions, please describe this uniqueness.

- See final paragraph of section II.B
- HSU's Geology Department is unique within the CSU system in its tectonic location and community responsibilities for providing outreach and information to the community.

  HSU is located close to the Mendocino triple junction where three tectonic plates intersect, one of very few locations on earth where a triple junction is located on land. The north coast and adjacent offshore area is the most seismically active region of the United States outside of Alaska. This provides a natural laboratory for the study of plate tectonics, earthquakes and tsunamis. HSU faculty and students have pioneered research in paleoseismology and paleotsunami studies. The convergent setting drives high regional uplift rates which, combined with high rainfall and deformed rock provides an extraordinarily dynamic environment for the study of rivers, landslides, sediment transport and fish habitat. The dynamic environment has significant impact on resource agencies and organizations in the region resulting in perhaps the largest per capita number of geomorphologists anywhere in the country, employed by the US Forest Service, Redwood National and State Parks, timber companies, consulting companies and state agencies.

This large regional group of earth scientists provides a stimulating environment for both students and faculty and provides many job opportunities for our students.

Geology BS

See general comments above.

Geology BA

See general comments above.

Geology (Geoscience Education)

See general comments above.

Geology Minor

See general comments above.

7. Opportunities for undergraduate scholarship/creative activities/service
   Estimate the percentage of your undergraduate majors that participate in scholarship/creative activities/professionally-related service, and provide some illustrative examples of such activities. Can students receive academic credit for these activities and have them counted toward undergraduate major requirements?

- About 40% of geology undergraduates do a senior thesis – independent scientific research required for the BS. Another 10% carry out independent study projects (499).
- About 8% (5 students/year) give student talks at Humboldt Friends of Geology, a local association of geologic professionals. No academic credit.
- About 8 –10% attend the yearly Friends of the Pleistocene professional field conferences (can receive independent study credit), and an equal number accompany faculty to professional meetings.
- About 4 –6 students/yr are volunteer docents at the HSU Earthquake/Tsunami Education room at the Humboldt County Fair. No academic credit.

D. Affiliations/Equipment/Facilities/Environment

1. Affiliations
   Some academic programs are affiliated with on-campus or off-campus centers, units or institutes that bring important benefits to programs. For any such center/unit/institute, please provide (1) the name of such center/unit/institute, and very brief descriptions of (2) the purpose of the center/unit/institute, (3) the nature of your program's affiliation with the center/unit/institute, and (4) the benefits accruing

to your program/major from your affiliation with this center/unit/institute. Units/centers/institutes may be public (HSU, CSU, local, state, federal) or private.

- US Forest Service Redwood Sciences Lab, Arcata (Lehre, Burke): Research into forest geomorphology and hydrology. The lab and the department lend each other field equipment and share access to lab facilities, to the benefit of both. Drs. Lisle, Reid, and Ziemer of the lab are geology adjunct faculty. They advise students, provide access to lab facilities and equipment, and involve our undergraduates in their research projects, both as paid employees and volunteers.
- CAMCOR (Center for Advanced Materials Characterization in Oregon) University of Oregon (Cashman, Schwab): Cashman and Schwab's affiliation provides important access to state-of-the-art microanalytical facility for teaching and research purposes and direct use by their undergraduate and graduate students. They are able to use the CAMCOR facilities at discounted rates. Schwab is also a Courtesy Research Associate of the University of Oregon.
- GNS New Zealand: two faculty are visiting scientists at the New Zealand Geological Survey.

2. Facilities and resources
   Provide a brief listing of your most important facilities, equipment and information/library resources, and describe the degree to which the current facilities, equipment and information/library resources affect program quality.

- Rigaku RIX 3000 X-ray fluorescence Spectrometer and Philips PW 3040/00 X-ray diffractometer. Fifteen years old, but in good shape and used by students in undergraduate core courses and by students and faculty for research. It is unusual to have such advanced equipment available for use by undergraduates, particularly in a school the size of Humboldt. Our chief problem is lack of funds for maintenance. When an X-ray tube dies, we may have to wait an year or more before a replacement is funded (they cost $4500 - $18,500). This of course severely affects instruction and student and faculty research which depends on the equipment.
- Experimental Petrology Lab: equipment to perform high temperature-pressure experiments on geologic materials. It is utilized in teaching and in undergraduate and faculty research. Few schools have such a facility. Ours is unique in being available to undergraduates.

- Laptop lab: our new 12-station, dual-boot portable laptop lab allows us to integrate technology into our lab classes. They greatly enhance program quality. Acquired through a private donation.
- GIS lab: 5 workstations and large format print/scanner allow students to create cutting edge presentations and posters for presentation in class and at professional meetings. Mostly acquired through private donations.
- Seismograph and earthquake information display. This consists of an old style drum recorder and a new donated dual screen computer display which provides 1) real time worldwide earthquake information and 2) a continuous slideshow about local and international earthquake hazards and mitigation. This display is a significant public education tool, and visitors to campus, including prospective students and their families, visit the Van Matre lobby to see our seismograph in action.
- Field vehicles: three 4-wheel drive vehicles used for field trips and at our capstone summer field camp. These vehicles are essential for maintaining our strong field based program. Three vehicles were replaced over the last eight years due to age and safety concerns. In 2008 we acquired a new 12-passenger four-wheel drive van which has made us more efficient. The vehicles have been largely acquired through alumni donations.
- Library resources: on-line access to geological and hydrological journals is good. Library book holdings are increasingly outdated. The library has been starved.

3. Unique local and regional environment
   Describe how the program takes advantage of the unique local or regional social, cultural and/or natural environment available to students and faculty at HSU. (Do not include items listed under D1.)

This is inseparable from program uniqueness. See discussion under C6.

IV. Investments, Revenues, and Efficiencies (Response Limit: 2 pages of narrative, not including tables) [20%]

A. Program Investments

1. Program Investment – Degree Requirements

Enter the total number of required course units (as listed in the catalog) for this academic program, and then the number of required course units for this academic

program that are from the primary course code associated with your program. Provide a total for each option if appropriate.

Student Units

Total required Program SCUs	BA 71 BS 75 GSci 71	Required Program SCUs in the primary Course Code	BA 41 BS 45 GSci 30

Weighted Teaching Units (WTU's)

Total the number of WTUs required to teach 1 section of each of the required courses in the program. If there are lists of restricted electives (e.g., take 1 of the following 3 courses), then choose a representative course from the list. For required S-factor courses, estimate the typical number of WTU's assigned to a faculty member who teaches the course. Again, differentiate by option if appropriate.

Total Required Program WTUs	BA 92 BS 95 GSci 88	Required Program WTUs in the primary Course Code	BA 57 BS 60 GSci 37

2. Program investment – by Minimum Weighted Teaching Units required to offer coursework so students can make reasonable progress toward their degree.

Complete the table below using the definitions that follow. Include additional columns as needed for additional options.

Total WTU in Course Code	WTU for GE and service to other academic Programs	WTU for Major Option 1 (BA)	WTU for Major Option 2 (BS)	WTU for Major Option 3 (Gsci)
265	111	138	144	88

Note: as per instructions, these are 2-year totals, not yearly or semester averages

Total WTU in Course Code: Sum up the total number of WTU that were used to teach courses in the primary course code associated with your academic program ***over the past two academic years****. Exclude remedial courses.*

Service to GE and other Academic Programs: Enter the total number of WTU that were used ***over the past 2 years*** *to meet service demands imposed by students outside the major. (In other word, if 8 sections of Egyptology 301 have been offered over the past 2 years, but if 2 sections over the past 2 years would have been sufficient for the*

Egyptology majors, then count 6 sections of Egyptology, and the associated WTU, in this category.)

WTU for Major Option (s): Sum up the non-service WTU for the set of courses in the course code associated with your program that you would need to offer ***over a two year period*** *to accommodate progress toward degree for your program students.*

Notes: 1) In programs with multiple options, courses common to the multiple options should be included in all options. Hence the entries to the right of the "Total" entry will not sum to the total. 2) Do not pro-rate WTU's by the percentage of students in a particular section of a course that are majors. Include the course in the count if it must be offered during a 2-year period for students to make progress toward their degree. The 4-year major plan for Freshmen may be useful.

3. Program Investments – by staff allocations.

   Estimate the percent of departmental expenditures for staff positions that can be attributed to this academic program. Provide an explanation, as appropriate.

	Major Program
Percent of Staff FTEF	2.35

Staff FTE

	1/31/2004		1/31/2005		1/31/2006		1/31/2007		1/31/2008	
GEOLOGY	Count	Sum	Count	Sum	Count	Sum	Count	Sum	Count	Sum
R07	1	1.00	1	1.00	1	1.00	1	1.00	1	1.00
R09	2	1.50	2	1.50	1	1.00	1	1.00	1	1.00
Total	3	2.50	3	2.50	2	2.00	2	2.00	2	2.00

Staff consists of 1 department coordinator, 1 department technician (necessary for maintenance of geology lab, field and instructional equipment), and 1 part-time stockroom technician who maintains stockroom and oversees student assistants.

4. Program Investments – Other annual costs.

Provide dollar estimates for other program costs by the following categories. Annualize periodic costs (equipment purchases or facilities upgrades) as necessary. Include an explanation, if appropriate. Do not include costs for commonly used items (smart classrooms, faculty workstations, etc.).

Category	**Estimated Cost**
Equipment (including maintenance)	12,700
Instructional Supplies	2,120
Temporary Help (graders, lab assistants, GA's, etc.)	9,800

5. Program Investments – accreditation [if applicable]

If this program is accredited, describe how this accreditation effects program costs.

N/A

B. Gross Revenues

Revenue DEPARTMENTS COMPLETE THIS SECTION	05/06	06/07	07/08
Fundraising/donations	67,620	54,500	10,586
Extended Education	1,485	918	579
Student fees	2,214	2,022	2,105
Instructionally Related Activities (IRA)			
Instructionally-related grants			
Grants and contracts to P.I.s	216,539	44,500	141,136
Other revenues Geol Trust Savings Interest	900	900	900

Provide an explanation for how these revenues support the academic program.

• Fundraising/donations have been crucial in providing equipment necessary to maintain and modernize our program. Our field vehicles have been largely purchased with donations. Our laptop lab, GIS lab, and dual-monitor earthquake information display were all acquired through private donations. In the past 3 years, we have received $132,706 in donations from 93 different individuals and businesses to the geology department and the Humboldt Earthquake Education Center.

- Student fees and extended education monies are used to replace items that are gradually worn out or depleted in classroom instruction: e.g., topographic maps, rock and mineral samples, measuring tapes, surveying rods, repair of surveying equipment, etc. Student fees are also used to defray fieldtrip costs.
- P.I. grants and contracts have provided most faculty computers and help to replace consumables used in preparing reports and presentations (e.g., inks, paper, toner). Grants have also provided equipment that is used by the department in research or instruction (e.g., LCD projector, soil augers, seismic refraction equipment.)

C. Efficiency

1. Efficiency – By SFR for course code

Academic Year Averages	Subject	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**
SFR	GEOL	16.31	17.40	16.60	16.05	19.24	18.74
FTEF	GEOL	8.16	8.32	8.07	7.51	6.48	5.93

SFR SUMMARY	02/03	03/04	04/05	05/06	06/07	07/08
AHSS	20.36	22.05	21.94	20.61	21.19	22.91
CNRS	15.66	16.90	17.17	16.04	16.82	18.28
CPS	15.12	16.29	15.68	15.22	20.80	25.33
UNIVERSITY TOTALS	17.28	18.65	18.57	17.52	19.32	21.43

Explain any substantial changes in SFR. Also explain why this SFR differs from the college and/or university SFR. What efforts have been made over the past few years by the program to improve this measure of efficiency? Use the data under part IV.E. as appropriate.

SFR has increased, and for the past 3 years exceeds the CNRS average. The reasons are: 1) retirement of faculty without replacement; 2) dramatically less-frequent offering of specialization courses; 3) increased section sizes in general education and service courses (e.g., Geol 109, 300, 303, 305, 350); 4) increased offerings of large-enrollment GE course Geol 106. (This increase in so-called efficiency has impacted the attractiveness of our program by reducing specialization course offerings.)

2. Efficiency – Other views.

The Prioritization Task Force will examine the data given under section IV.A and B in terms of the overall production (e.g. number of majors, number of graduates) in the program. Please comment if appropriate.

D. Budget cut impacts

Indicate how your program has been affected by recent (since 2002-2003) budget cuts that have directly affected resources for your program (faculty, staff, operating expense) and course offerings (class size, reduced course offerings or options for the major.) Refer to the data included under section IV. E. or in the departmental report as appropriate.

- Retirement of 2 faculty with no replacement
- Elimination of all part-time/temporary faculty
- Significantly reduced variety and frequency of offerings of upper-division and graduate-level specialization courses handicaps us in recruitment, retention, and professional/career development of both undergraduate and graduate students. (5-7 courses/year reduced to 2-3/year).
- Significantly reduced variety and frequency of offerings of upper-division general education courses, which are important in meeting University vision goals 1, 2, 4, 5, 7 and 8. (6-7 courses/year reduced to 2-3/year)
- Approximately 25% reduction in OE causing 1) reduced ability to repair or replace failed equipment; 2) inability to replace obsolete computers for faculty and staff; 3) loss of 3 student assistants for office, stockroom, graders; and 4) reduction in supplies available for instruction.

E. Additional Data

Course Offerings Profile in Geology (AY 00/01 - AY 07/08)
class_offerings_GEOL report generated: 27-JUN-08

	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Distinct Courses Enrolled	20	21	25	25	22	20	18	16
Sections Enrolled	37	36	41	43	37	39	32	27
Average Section Enrollment	22	23	21	22	24	21	26	27

Distinct Courses Enrolled in Geology by Level (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	3	3	3	3	2	2	2	2
Upper-div	12	12	17	16	15	13	12	10
Graduate	5	6	5	6	5	5	4	4
Total	**20**	**21**	**25**	**25**	**22**	**20**	**18**	**16**

Sections Enrolled in Geology by Level (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	9	9	7	7	7	8	8	8
Upper-div	21	18	27	26	25	22	20	15
Graduate	7	9	7	11	6	9	4	4
Total	**37**	**36**	**41**	**43**	**37**	**39**	**32**	**27**

Avg Section Enrollment in Geology by Level (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	44	42	56	56	55	46	55	52
Upper-div	17	21	15	18	18	18	18	18
Graduate	8	11	10	10	10	7	11	12
Total	**69**	**74**	**80**	**84**	**83**	**71**	**83**	**82**

FTES in Geology by Course Level (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	**AY 00/01**	**AY 01/02**	**AY 02/03**	**AY 03/04**	**AY 04/05**	**AY 05/06**	**AY 06/07**	**AY 07/08**
Lower-div	60.6	57.0	69.0	70.2	66.9	59.9	75.2	67.9
Upper-div	46.2	49.6	54.6	59.9	59.1	51.6	42.8	36.5
Graduate	9.2	13.1	9.5	14.6	8.0	9.1	6.7	6.9
Total	**115.9**	**119.8**	**133.1**	**144.7**	**133.9**	**120.6**	**124.7**	**111.3**

NOTE: In the above tables all class sections have 2 or more students enrolled. This is done to minimize the influence of independent student sections.
Distinct Courses count each distinct SUBJ/Course-number combination enrolled.
All figures are Fall/Spring term averages. Due to the rounding of average Academic Year counts, the various breakouts may not add to the exact same amounts.

Other Class Offering Breakouts

These examine independent study sections, and sections by different modes of instruction. The Lecture-only sections have only a C1 through C6 mode. The Lab/Activity-only sections have only a C7 through C-16 mode. Other modes and combinations contain the remaining modes or combinations of lecture and lab/activity modes.

Other Special breakouts in Geology (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Sections with 1 student enrolled	15	12	10	10	13	10	16	8
Lecture only sections	13	14	15	19	15	15	16	12
Lab/Activity only sections	13	14	10	9	9	12	10	10
Other modes and combinations	11	8	17	16	14	12	7	6

Service Courses

The following shows sections which are considered service for either General Education, CWT (Communication and Ways of Thinking), DCG (Diversity and Common Ground), or Institutions Requirements.

Service Course Sections Enrolled in Geology (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Lower-div	9	9	7	7	7	8	9	8
Upper-div	4	5	6	7	6	4	3	2

Service Course FTES in Geology (AY 00/01 - AY 07/08) class_offerings_GEOL report generated: 27-JUN-08								
Course Level	AY 00/01	AY 01/02	AY 02/03	AY 03/04	AY 04/05	AY 05/06	AY 06/07	AY 07/08
Lower-div	60.6	57.0	69.0	70.2	66.9	59.9	75.2	67.9
Upper-div	16.8	18.7	24.1	28.2	26.9	18.9	13.8	10.9

V. Potential (Please complete this section for each option. Limit: 2 pages per option) [15%]

A. Program capacity with existing resources:

1. What is your program's maximum capacity with current resources? Use two metrics to define "capacity": The number of graduates per year, and the number of FTES generated by courses that are unique to this option, per year.

Geology BA & BS & Geoscience Education Options

These are all considered together below, because the Geoscience option piggy-backs on the BA & BS program and at this time does not use any additional departmental resources.

(Completed by the department)	Graduates per year	FTES in the major option per year
Existing	20	57
Maximum capacity with existing resources	20 – 24*	57 – 68

*Program capacity is limited by summer field camp (not required for geoscience option), which can handle a maximum of 24 students/section, and by mineralogy and petrography labs, which can only hold 20 students.

2. If your program is at maximum capacity, proceed to question 2. If you have capacity to grow with existing resources, what steps have been taken to increase enrollment? What have been the effects of these steps, and what results are still anticipated?

N/A

B. Opportunities for future growth or substantial curricular changes

1. What opportunity does the program have for future expansion? Provide evidence for your response.

- There is currently a great increase in demand for earth scientists (cf. II.B)
- With current staffing resources BS & BA programs are at capacity – we can teach only one section of each required course per year.
- With sufficiently increased staffing BS & BA programs could increase by 20 –50% to 70 – 90 majors
- If Geoscience program is restructured to make it more inclusive, flexible, and appealing, it has potential to grow significantly (e.g. to 20 –30 or more majors) given the demand for earth scientists.

2. Describe the curricular changes and/or staffing increases required to accomplish such an expansion?

• Additional faculty needed to teach additional sections of core curriculum and specialization courses (at least 1, possibly 2 faculty).

• Restructure geoscience curriculum, e.g., require less advanced math, chemistry, and physics, replace mineralogy (310) and petrography (311) and add new "rocks and minerals" course. Require natural disasters (308) course. Incorporate GIS proficiency. Improve interdisciplinary connections and emphasize environmental responsibility.

C. Impact of augmented resources

Suppose that your program were ranked in a category that recommended augmentation of resources. What would be the impact of augmented resources? (Answer for a 10% augmentation and a 20% augmentation.)

10% augmentation

• Allow hiring of part-time faculty to teach introductory classes, freeing faculty to teach more sections of most important class sequences

• Increase offerings of specialization courses, strengthening program and better preparing students for licensing exams

• Restructure geoscience program, offer Rocks & Minerals course

• Allows modest growth of program, especially in geoscience

20% augmentation

• Items above, plus:

• Hire engineering/groundwater geologist with GIS and field skills (identified as important in program review and assessment, and improve preparedness for students to take licensing exams)

• Allow more than one section of field camp (as needed)

• Enlarge GIS capacity, incorporate GIS into regular instruction and research

• Allows significant growth of program, especially in geoscience

• Enhanced program would better serve needs of watershed, soils, engineering, geography students

D. Impact of reduced resources

Suppose that your program were ranked in a category that recommended reduction of resources. What would be the impact of reduced resources? (Answer for a 10% reduction and a 20% reduction.)

10% reduction

- Further reduction in offering of geology specialization courses, which reduces appeal of program to prospective majors and employers.
- Capstone geology field camp course might have to be offered only every other year, which would significantly retard student progress to graduation.
- Reduced offering of Geol 106, the largest lower division General Education course in CNRS, from 4 sections (about 525 students/yr) to 3 sections (about 425 students/yr)

20% reduction

- Geology curriculum reduced to bare-bones offering of only the minimum courses required for graduation.
- Inability to offer capstone geology field camp course
- Appeal of program to prospective students and employers reduced due to reduction in specialization courses and field camp
- Reduced offerings of Geol 106, from 4 sections (about 525 students/yr) to 2 sections (about 300 students/yr)
- Probable elimination of upper-division general education courses Geol 303 “Earth Resources & Global Environmental Change”, Geol 305 “Fossils, Life & Evolution”, and Geol 308 “Natural Disasters”. These courses directly support HSU Vision statements 1, 2, 4, 5, 7, and 8. This would also affect several programs which require these courses.
- Probable elimination of part-time stockroom technician, causing reduced maintenance of equipment used in teaching and much poorer inventory control, as stockroom would be staffed only by part-time undergraduate assistants.
- Reduction in community outreach and service (see part E below for details)

E. Impact of program elimination
Suppose that your program were recommended to be discontinued. What would be the impact of program elimination?

Discontinuation of Geology BA and BS

Effects on other programs:

- Elimination of Geol 106, the largest lower division General Education course in CNRS (about 525 students/yr)
- Elimination of support courses for 19 other programs (see Table II.A.3)
- Loss of faculty expertise drawn on by other CNRS programs, especially in soils, watershed, and fisheries

Effects on the University and larger community

- Loss of community outreach and service:
  --Earthquake, tsunami, active faulting and disaster education and hazard analysis for the general public and for agencies (Dengler, Hemphill-Haley, Cashman)
  --Landslide, flood, sediment transport, gravel mining and geomorphic education for the general public and advising for agencies (Lehre, Burke)
  --Fossil identification and paleontological education for teachers, schools, and general public (Miller)
  --Rock and mineral identification and education for teachers, schools, and the general public (Schwab)
- Reduction of supply of skilled geologists to consulting firms and government agencies.

Discontinuation of Geoscience Education BA

Prohibits students with family or health issues that are unable to take field camp from getting a geology degree at Humboldt.

VI. Additional Information (Limit: 1 page) [up to 5 extra credit points may be assigned to the overall score]

Provide crucial information that is not provided under the previous categories.

• Role in earthquake and tsunami education, outreach and emergency planning.

Since 1985, geology faculty have received nearly $400,000 in contracts and donations from individuals and businesses to provide earthquake and tsunami information to the region. In 2007, the department's Humboldt Earthquake Education Center was given sole source status to provide outreach for California north of Santa Rosa. HSU faculty have provided interviews to national and international media including National Geographic, the New York Times, Newsweek, the Washington Post and Rolling Stone and have been involved with television documentaries including NOVA and the Canadian Broadcasting Corporation. In 1996, HSU Geology was one of the founding agencies that established the Redwood Coast Tsunami Work Group (RCTWG) and has been a primary partner in RCTWG projects including the annual Earthquake-Tsunami Room at the Humboldt and Del Norte County Fairs, comprehensive tsunami signage in Mendocino, Humboldt and Del Norte counties, California's first full-scale tsunami evacuation drill and test of the Emergency Alert System using live codes.

• Namson-Hagans Senior Thesis Fund (in Geology Trust)

The department's alumni maintain a fund to provide modest support of up to $150/student for expenses incurred in senior thesis research. The student must submit a formal research proposal, complete with proposed budget and time schedule, which is evaluated by the department faculty. This provides the student not only with support, but also with real-world experience in designing a research proposal and funding request.

APPENDIX

HSU *Vision* Statement

1. Humboldt State University will be the campus of choice for individuals who seek above all else to improve the human condition and our environment.

2. We will be the premier center for the interdisciplinary study of the environment and its natural resources.

3. We will be a regional center for the arts.

4. We will be renowned for social and environmental responsibility and action.

5. We believe the key to our common future will be the individual citizen who acts in good conscience and engages in informed action.

6. We will commit to increasing our diversity of people and perspectives.

7. We will be exemplary partners with our communities, including tribal nations.

8. We will be stewards of learning to make a positive difference.